

## WHAT IS CLAIMED IS:

1. A microstructure structure for transferring a substance through the surface of the skin, comprising:
  - (a) a substrate having a first side and a second side; and
  - (b) a plurality of microstructures projecting from said second side of said substrate, each of said microstructure having at least one hollow, said hollows being isolated from fluid connection with said first side of said substrate, said hollows being configured such that, when said microstructures are inserted through the surface of the skin, at least part of the substance is transferred through the surface of the skin in said hollows.
2. The structure of claim 1, wherein said hollows is a single-opening hollows.
3. The structure of claim 1, wherein each of said microstructures has a plurality of hollows isolated from fluid connection with said first side of said substrate.
4. The structure of claim 1, further comprising a medical substance disposed in said hollows.
5. The structure of claim 1, further comprising a cosmetic substance disposed in said hollows.
6. The structure of claim 1, further comprising a rolling arrangement, wherein said rolling arrangement, said substrate and said microstructures together form a microstructure rolling system, said microstructure rolling system being configured such that, at least part of the substance is transferred through the surface of the skin as said microstructure rolling system is rolled over the surface of the skin.
7. The structure of claim 6, wherein said microstructure rolling system includes a dispensing arrangement configured to store the substance and to dispense the substance into said hollows of said microstructures.

8. A microstructure structure for transferring a substance through the surface of the skin, comprising:

- (a) a substrate having a first side and a second side; and
- (b) at least one microstructure projecting from said second side of said substrate, said at least one microstructure having at least one hollow, said at least one hollow being isolated from fluid connection with said first side of said substrate, said at least one hollow being configured such that, when said at least one microstructure is inserted through the surface of the skin, at least part of the substance is transferred through the surface of the skin in said at least one hollow.

9. The structure of claim 8, wherein said hollow is a single-opening hollow.

10. The structure of claim 8, wherein said at least one microstructure has a plurality of hollows, said hollows being isolated from fluid connection with said first side of said substrate.

11. A method for transferring a substance through the surface of the skin using a microstructure structure, the microstructure structure including a substrate having a first side and a second side, the microstructure structure including a plurality of microstructures projecting from the second side of the substrate, the method including the steps of:

- (a) applying the substance to the microstructure structure from said second side;
- (b) disposing the microstructure structure onto the surface of the skin, such that the microstructures penetrate the surface of the skin thereby transferring at least part of the substance through the surface of the skin.

12. The method of claim 11, wherein:

- (a) said step of applying is performed by disposing at least part of the substance into hollows of the microstructures, said hollows being isolated from fluid connection with the first side of the substrate; and

- (b) said step of disposing the microstructure structure onto the surface of the skin is performed such that at least part of the substance is transferred through the surface of the skin in said hollows.
13. The method of claim 11, wherein the substance is a dry substance.
14. The method of claim 11, wherein the substance is a gel.
15. The method of claim 11, wherein the substance is a cream.
16. The method of claim 11, wherein the substance is a cosmetic substance.
17. The method of claim 11, wherein the substance is a medical substance.
18. A microstructure system for penetrating the surface of the skin, comprising:
- (a) a rolling element;
  - (b) a plurality of microstructures interconnected with said rolling element, said microstructures having an inter-needle spacing of less than 1mm; and
  - (c) a handle mechanically connected to said rolling element, said rolling element being configured to rotate with respect to said handle, wherein said rolling element, said microstructures and said handle are configured such that, when said handle is manipulated in order to roll said microstructures over the surface of the skin, the microstructures penetrate the surface of the skin.
19. A microstructure system for penetrating the surface of the skin, comprising:
- (a) a rolling element;
  - (b) an integrally formed microstructure structure having a substrate and a plurality of microstructures projecting from said substrate, said microstructure structure being interconnected with said rolling element; and
  - (c) a handle mechanically connected to said rolling element, said rolling element being configured to rotate with respect to said handle, wherein said rolling element, said microstructure structure and said handle are configured such that,

when said handle is manipulated in order to roll said microstructures over the surface of the skin, the microstructures penetrate the surface of the skin.

20. A microstructure system for penetrating the surface of the skin, comprising:
- (a) a rolling element, said rolling element being substantially spherical;
  - (b) a plurality of microstructures interconnected with said rolling element; and
  - (c) a handle mechanically connected to said rolling element, said rolling element being configured to rotate with respect to said handle, wherein said rolling element, said microstructures and said handle are configured such that, when said handle is manipulated in order to roll said microstructures over the surface of the skin, the microstructures penetrate the surface of the skin.
21. A microstructure system for transferring a substance through the surface of the skin, comprising:
- (a) a rolling element;
  - (b) a plurality of microstructures interconnected with said rolling element;
  - (c) a handle mechanically connected to said rolling element, said rolling element being configured to rotate with respect to said handle; and
  - (d) a dispensing arrangement mechanically connected to said rolling element, said dispensing arrangement being configured to store the substance and to dispense the substance onto the microstructures, wherein said rolling element, said microstructures, said handle and said dispensing arrangement are configured such that, when said handle is manipulated in order to roll said microstructures over the surface of the skin, at least part of the substance is transferred through the surface of the skin.
22. A microstructure system for transferring a substance through the surface of the skin, comprising:
- (a) a rolling element;
  - (b) a plurality of microstructures interconnected with said rolling element, each of said microstructures having a channel therethrough;

- (c) a reservoir configured for storing the substance, said reservoir being interconnected with said channels of said microstructures such that, said reservoir is configured for dispensing the substance via said channels of said microstructures; and
  - (d) a handle mechanically connected to said rolling element, said rolling element being configured to rotate with respect to said handle, wherein said rolling element, said microstructures, said reservoir and said handle are configured such that, when said handle is manipulated in order to roll said microstructures over the surface of the skin thereby causing said microstructures to penetrate the surface of the skin, at least part of the substance is transferred through the surface of the skin via said channels of said microstructures.
23. A microstructure system for penetrating the surface of the skin, comprising:
- (a) a roller;
  - (b) a handle mechanically connected to said roller, said roller being configured to rotate with respect to said handle; and
  - (c) a plurality of microstructures interconnected with said roller, said microstructures being configured such that:
    - (i) when said roller is rolled in a first direction said microstructures penetrate through the surface of the skin to a first depth; and
    - (ii) when said roller is rolled in a second direction said microstructures penetrate through the surface of the skin to a second depth, wherein said first depth is greater than said second depth.
24. The system of claim 23, wherein said second depth is zero.